February 11, 1998

EXPLOSIVE ORDNANCE DISPOSAL/LOW INTENSITY CONFLICT
CANDIDATE PROJECT SUBMISSION

Project Title: HMMWV-based Laser Ordnance Neutralization System (H-LONS) User Evaluation and Demonstrations

Submitting Organization: Naval EOD Technology Division

Supporting Service: Joint, Air Force lead, Approved Notional Concept #6-97.

Project Type: EOD

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Threat Environment: One of the highest threat UXOs to EOD technicians are submunitions. These are small explosive ordnance items dispersed by hundreds and even thousands by artillery, dispensers, and missile systems. These items are normally encountered on the surface and are hazardous for two reasons. The first is that some of the submunitions are designed to kill or injure personnel and act as area denial weapons. These submunitions are small and many contain anti-disturbance features. The second and more prevalent hazard is that the submunition fails to function, and is in an unknown condition, but assumed to be armed and could detonate at any time. Hundreds of these submunitions remain as UXOs after a single engagement. In the U.S. sector of Kuwait, 125,000 submunitions were found and cleared.

Compounding the dud rate is the high volume of ordnance that can be expected in future conflicts. Delivery of numerous munitions by such systems as multiple rocket launchers and scatterable minelaying systems have the potential to create a UXO problem able to quickly outstrip current EOD capabilities. The inability to quickly deal with areas contaminated by a high volume of UXOs may restrict maneuverability in the affected area and limit use of maneuver warfare and may also deny use of airfields.

Specific Technical/Operational Need: Currently, there are no tools fielded for use against large numbers of targets such as found in submunitions areas. Current systems for clearance of large areas rely on operator interaction with the target. Techniques such as Blow-In-Place (BIP) or Pick-Up-Carry-Away (PUCA) or using specialized EOD tools are used to clear areas of UXOs. These techniques require one man one bomb operations and have led to the death of both military and contractor personnel in clearance operations CONUS and OCONUS. Accidents often occur due to complacency and boredom associated with dealing with hundreds of items.

EOD technicians need a system to rapidly neutralize large quantities of UXOs over a large area from a safe standoff distance. A laser neutralization system can provide a solution to this need.

Proposed Technical Approach and Expected Performance: This project will leverage advancements made in the EOD 6.2 Applied Research project for the development of a diode pumped laser for UXO neutralization. It will allow the prototype H-LONS laser system to be operated and evaluated by military EOD technicians in a real operational environment. The system will be operated by EOD personnel at an Air Force test bombing range to clear submunitions, such as BLU-97's, BLU-63's, and MK-118's. The system would be used during normal range EOD operations, and will provide a unique, improved capability. The laser will be able to cause neutralization (nominally a low order reaction) of target submunitions at ranges of 50 to 300 meters. The system will be available for demonstration to other interested mililary users.

SPARTA, Inc. will provide training on the system to the EOD users. They will also provide some limited operation of the laser system, required maintenance, and other support to develop the most effective techniques and methods of engagement against different submunition targets.

NAVEODTECHDIV will provide task management functions, collect user feedback, and coordinate the collection of performance data.

The users will provide feedback regarding the effectiveness, ease of use, reliability, maintainability, etc., as well as suggestions and recommendations. The information gathered will be invaluable to the Analysis of Alternatives (AOA) for a laser neutralization acquisition program that has been POMed by PMS-EOD.

Also, interest generated by other military users will greatly enhance a future acquisition program. A probable acquisition strategy will be to develop a joint program between EOD and another military user.

Existing Capabilities: Under the Office of Naval Research (ONR) sponsored 6.2 EOD Applied Research project, a prototype laser system was developed to demonstrate the feasibility of using a 500 watt diode pumped laser to neutralize submunitions. The laser device was purchased with Navy funding from TRW, Inc., and has performed well in laboratory testing against inert target samples, and SPARTA Inc. is incorporating the laser onto a HMMWV as a field testbed. The all-up demonstration prototype is jointly owned by the Navy and SPARTA, Inc, and will be tested against live targets in a controlled test range at Redstone Arsenal, Huntsville, Alabama, this September or October.

Estimated Cost: FY99 $300k FY00 $450k Total $750k

Estimated Project Duration: 24 months

Potential Performer (Government):

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